



Aquaterra
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Burlington, VT 05401
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roland@luxenberg.us



8 October 2012

Ms. Sarah Bartlett
ANR DEC WMD Sites Management Section
103 South Main Street West Office
Waterbury, VT 05671-0404

Re: Monitoring report for Railroad Street Texaco (Site # 89-0433) in St. Johnsbury

Dear Ms. Bartlett

Introduction

Railroad Street Texaco (now Shell) is located on the northeast corner of the intersection of Railroad Street and Pleasant Street just north of the St. Johnsbury city center. This site has been investigated since 1990 due to a suspected petroleum release.

The following is a description of site monitoring during August 2010 conducted in response to a request for monitoring (ANR letter dated 28 July 2010).

10 August 2010 Groundwater Sampling

Water sampling at two (2) groundwater monitoring wells was completed on 24 July 2012. Prior to sampling, the depth to water was determined using an electronic water level meter. The wells were purged until dry using dedicated string and plastic bailers. After each well was given time to recover, bailers were used to collect groundwater from each well. Collected water was poured into 40 milliliter vials equipped with zero headspace septa screw caps and containing hydrochloric acid as a preservative. Water temperature and specific conductance were measured using field meters. Samples were stored on ice and delivered to Test America in South Burlington, VT for petroleum related volatile organic compound (VOC) analysis.

A tabular summary of field and analytical data is found on Table 1, including results from previous sampling rounds in February 1990, May 1991, and August 2012. Total VOC concentrations on 24 July 2012 are found on the attached Site Map. Laboratory analytical reports are attached.

Conclusions

Compared to August 2012 data, the most recent monitoring found higher concentrations concentrations for BTEX and other VOCs in MW-1. Wells MW-2 contained one compound

(naphthalene) at a concentration (1.3 ug/l) just above method reporting limits (1.0 ug/l). Two compounds (**Naphthalene** at 98 ug/l, and **sum of TMBs** at 580 ug/l) exceeded the corresponding Primary Groundwater Enforcement Standard (PGES) of 20 and 350 ug/l, respectively, in MW-1.

Recommendations

Because PGES were exceeded at one location (MW-1) for two compounds (naphthalene and sum of TMBs), this site should be sampled in the summer of 2014. Only well MW-1 need be sampled. If the naphthalene and sum of TMBs concentrations (and all other compounds) in this well falls below PGES, this site could be closed, or if the naphthalene and sum of TMBs concentrations are similar to 2010 levels, this site could be closed with a notice a Notice to Land Records.

Please contact me if you have any questions regarding the information, conclusions, or recommendations found in this letter.

Sincerely

A handwritten signature in black ink that reads "Roland Luxenberg". The script is cursive and fluid, with the first letters of the first and last names being capitalized and prominent.

Roland Luxenberg, P.E.

cc: Wesco, Inc. (South Burlington, VT)

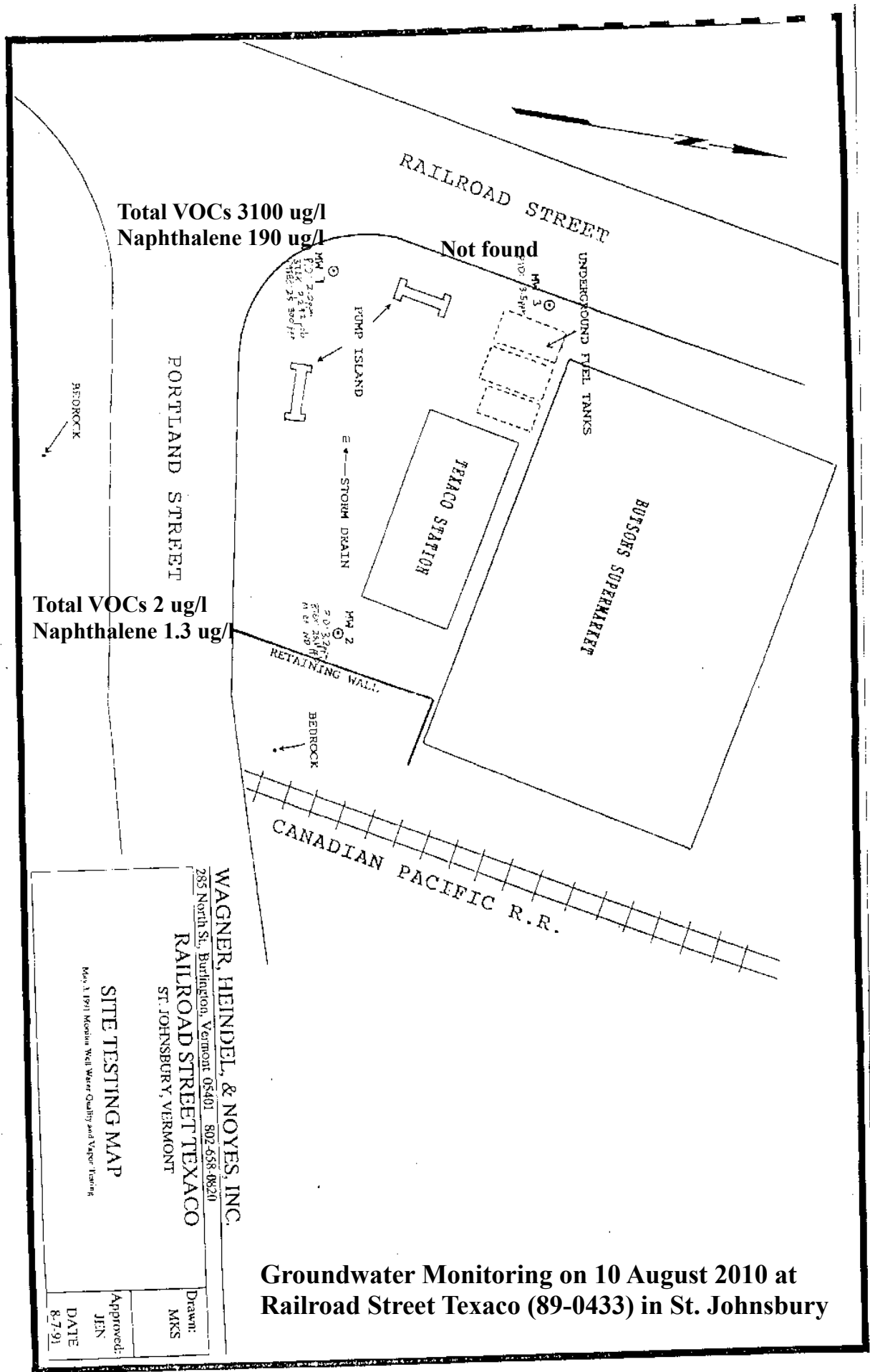
Table 1 Groundwater field and analytical data for Railroad Street Texaco (#89-0433) in St. Johnsbury

Parameter	Monitoring Well								PGES
	MW-2				MW-1				
	2-Feb-90	3-May-91	10-Aug-10	24-Jul-12	2-Feb-90	3-May-91	10-Aug-10	24-Jul-12	
Depth to water, feet			14.39	14.38			13.44	13.35	na
Depth to bottom, feet			16.65	16.65			14.5	14.5	na
Standing water, liters			1.4	1.4			0.7	0.7	na
Purge volume, liters			2 dry	2 dry			1 dry	1 dry	na
Temperature, degrees C			16.3	14.7			16.7	15.7	na
Specific conductance, uS			1050	1600			2500	3100	na
VOCs by Method 602/8260, ug/l									
Benzene (B)	17.2	4.5	<1.0	0.25 J	3200	1120	<4.4	<20	5
Toluene (T)	10.2	1.6	<1.0	<1.0	12200	4200	100	96	1000
Ethylbenzene (E)	44	<1.0	<1.0	<1.0	3100	460	340	400	700
Total Xylenes (X)	187	19	<1.0	<1.0	24000	3500	1200	1800	10000
BTEX	260	25	<1.0	0.25 J	43000	9300	1640	2300	na
Methyl tertiary butyl ether	<1.0	<1.0	<1.0	<1.0	22000	25000	<4.4	<20	40
Naphthalene			<1.0	1.3			98	190	20
1,2,4-Trimethylbenzene			<1.0	0.51 J			250	430	350 (sum)
1,3,5-Trimethylbenzene			<1.0	<1.0			88	150	350 (sum)
total VOC			<1.0	2			2300	3100	350 (sum)

Notes:

PGES = Primary Groundwater Enforcement Standard;
602 analysis in 1990 and 1991

Bolded concentrations exceed PGES



Groundwater Monitoring on 10 August 2010 at Railroad Street Texaco (89-0433) in St. Johnsbury

ANALYTICAL REPORT

Job Number: 200-11906-1

Job Description: Barrie (MW-3) & St. J

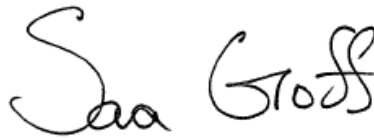
For:

Aquaterra

255 Flynn Ave.

Burlington, VT 05401

Attention: Mr. Roland Luxenberg



Approved for release.
Sara S Goff
Project Manager I
8/9/2012 3:03 PM

Designee for
Don C Dawicki
Customer Service Manager
don.dawicki@testamericainc.com
08/09/2012

The test results in this report relate only to sample(s) as received by the laboratory. These test results were derived under a quality system that adheres to the requirements of NELAC. Pursuant to NELAC, this report may not be produced in full without written approval from the laboratory

CASE NARRATIVE

Client: Aquaterra

Project: Barrie (MW-3) & St. J

Report Number: 200-11906-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 07/24/2012; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 10.8 C.

VOLATILE ORGANIC COMPOUNDS (GC-MS)

Samples MW-3, MW-2 and MW-1 were analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 08/01/2012 and 08/06/2012.

Samples MW-3[18X] and MW-1[20X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the volatiles analyses.

All quality control parameters were within the acceptance limits.

EXECUTIVE SUMMARY - Detections

Client: Aquaterra

Job Number: 200-11906-1

Lab Sample ID Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
200-11906-1	MW-3					
Methyl t-butyl ether		63		18	ug/L	8260B
Benzene		550		18	ug/L	8260B
Toluene		40		18	ug/L	8260B
Ethylbenzene		80		18	ug/L	8260B
m&p-Xylene		64		18	ug/L	8260B
o-Xylene		34		18	ug/L	8260B
Xylenes, Total		98		18	ug/L	8260B
1,2,4-Trimethylbenzene		260		18	ug/L	8260B
Naphthalene		39		18	ug/L	8260B
200-11906-2	MW-2					
Benzene		0.25	J	1.0	ug/L	8260B
1,2,4-Trimethylbenzene		0.51	J	1.0	ug/L	8260B
Naphthalene		1.3		1.0	ug/L	8260B
200-11906-3	MW-1					
Toluene		96		20	ug/L	8260B
Ethylbenzene		400		20	ug/L	8260B
m&p-Xylene		1500		20	ug/L	8260B
o-Xylene		380		20	ug/L	8260B
Xylenes, Total		1800		20	ug/L	8260B
1,3,5-Trimethylbenzene		150		20	ug/L	8260B
1,2,4-Trimethylbenzene		430		20	ug/L	8260B
Naphthalene		190		20	ug/L	8260B

METHOD SUMMARY

Client: Aquaterra

Job Number: 200-11906-1

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Volatile Organic Compounds (GC/MS)	TAL BUR	SW846 8260B	
Purge and Trap	TAL BUR		SW846 5030B

Lab References:

TAL BUR = TestAmerica Burlington

Method References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

METHOD / ANALYST SUMMARY

Client: Aquaterra

Job Number: 200-11906-1

Method	Analyst	Analyst ID
SW846 8260B	Phillips, Mark T	MTP

SAMPLE SUMMARY

Client: Aquaterra

Job Number: 200-11906-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
200-11906-1	MW-3	Water	07/24/2012 1000	07/24/2012 1605
200-11906-2	MW-2	Water	07/24/2012 1325	07/24/2012 1605
200-11906-3	MW-1	Water	07/24/2012 1335	07/24/2012 1605

SAMPLE RESULTS

Analytical Data

Client: Aquaterra

Job Number: 200-11906-1

Client Sample ID: MW-3

Lab Sample ID: 200-11906-1

Date Sampled: 07/24/2012 1000

Client Matrix: Water

Date Received: 07/24/2012 1605

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	200-43108	Instrument ID:	L.i
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	lhmk06.d
Dilution:	17.6			Initial Weight/Volume:	5 mL
Analysis Date:	08/06/2012 1330			Final Weight/Volume:	5 mL
Prep Date:	08/06/2012 1330				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Methyl t-butyl ether	63		3.0	18
Benzene	550		3.0	18
Toluene	40		3.0	18
Ethylbenzene	80		3.2	18
m&p-Xylene	64		6.3	18
o-Xylene	34		3.0	18
Xylenes, Total	98		3.0	18
1,3,5-Trimethylbenzene	18	U	3.2	18
1,2,4-Trimethylbenzene	260		3.5	18
Naphthalene	39		2.1	18

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4	88		80 - 115
Toluene-d8	100		80 - 115
Bromofluorobenzene	100		85 - 120
1,2-Dichlorobenzene-d4	93		80 - 115

Analytical Data

Client: Aquaterra

Job Number: 200-11906-1

Client Sample ID: MW-2

Lab Sample ID: 200-11906-2

Client Matrix: Water

Date Sampled: 07/24/2012 1325

Date Received: 07/24/2012 1605

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	200-42794	Instrument ID:	L.i
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	lhmj17.d
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	08/01/2012 1839			Final Weight/Volume:	5 mL
Prep Date:	08/01/2012 1839				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Methyl t-butyl ether	1.0	U	0.17	1.0
Benzene	0.25	J	0.17	1.0
Toluene	1.0	U	0.17	1.0
Ethylbenzene	1.0	U	0.18	1.0
m&p-Xylene	1.0	U	0.36	1.0
o-Xylene	1.0	U	0.17	1.0
Xylenes, Total	1.0	U	0.17	1.0
1,3,5-Trimethylbenzene	1.0	U	0.18	1.0
1,2,4-Trimethylbenzene	0.51	J	0.20	1.0
Naphthalene	1.3		0.12	1.0
Surrogate	%Rec	Qualifier	Acceptance Limits	
1,2-Dichloroethane-d4	90		80 - 115	
Toluene-d8	103		80 - 115	
Bromofluorobenzene	104		85 - 120	
1,2-Dichlorobenzene-d4	96		80 - 115	

Analytical Data

Client: Aquaterra

Job Number: 200-11906-1

Client Sample ID: MW-1

Lab Sample ID: 200-11906-3

Date Sampled: 07/24/2012 1335

Client Matrix: Water

Date Received: 07/24/2012 1605

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	200-42794	Instrument ID:	L.i
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	lhmj18.d
Dilution:	20			Initial Weight/Volume:	5 mL
Analysis Date:	08/01/2012 1911			Final Weight/Volume:	5 mL
Prep Date:	08/01/2012 1911				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Methyl t-butyl ether	20	U	3.4	20
Benzene	20	U	3.4	20
Toluene	96		3.4	20
Ethylbenzene	400		3.6	20
m&p-Xylene	1500		7.2	20
o-Xylene	380		3.4	20
Xylenes, Total	1800		3.4	20
1,3,5-Trimethylbenzene	150		3.6	20
1,2,4-Trimethylbenzene	430		4.0	20
Naphthalene	190		2.4	20

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4	92		80 - 115
Toluene-d8	105		80 - 115
Bromofluorobenzene	108		85 - 120
1,2-Dichlorobenzene-d4	98		80 - 115

DATA REPORTING QUALIFIERS

Client: Aquaterra

Job Number: 200-11906-1

Lab Section	Qualifier	Description
GC/MS VOA	U	Indicates the analyte was analyzed for but not detected.
	J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

QUALITY CONTROL RESULTS

Quality Control Results

Client: Aquaterra

Job Number: 200-11906-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
GC/MS VOA					
Analysis Batch:200-42794					
LCS 200-42794/3	Lab Control Sample	T	Water	8260B	
MB 200-42794/5	Method Blank	T	Water	8260B	
200-11906-2	MW-2	T	Water	8260B	
200-11906-3	MW-1	T	Water	8260B	
Analysis Batch:200-43108					
LCS 200-43108/3	Lab Control Sample	T	Water	8260B	
MB 200-43108/5	Method Blank	T	Water	8260B	
200-11906-1	MW-3	T	Water	8260B	

Report Basis

T = Total

Client: Aquaterra

Job Number: 200-11906-1

Surrogate Recovery Report**8260B Volatile Organic Compounds (GC/MS)****Client Matrix: Water**

Lab Sample ID	Client Sample ID	DCA %Rec	TOL %Rec	BFB %Rec	DCZ %Rec
200-11906-1	MW-3	88	100	100	93
200-11906-2	MW-2	90	103	104	96
200-11906-3	MW-1	92	105	108	98
MB 200-42794/5		94	102	106	95
MB 200-43108/5		93	105	108	98
LCS 200-42794/3		100	103	103	95
LCS 200-43108/3		90	103	102	95

Surrogate	Acceptance Limits
DCA = 1,2-Dichloroethane-d4	80-115
TOL = Toluene-d8	80-115
BFB = Bromofluorobenzene	85-120
DCZ = 1,2-Dichlorobenzene-d4	80-115

Quality Control Results

Client: Aquaterra

Job Number: 200-11906-1

Method Blank - Batch: 200-42794

Method: 8260B

Preparation: 5030B

Lab Sample ID: MB 200-42794/5
 Client Matrix: Water
 Dilution: 1.0
 Analysis Date: 08/01/2012 1212
 Prep Date: 08/01/2012 1212
 Leach Date: N/A

Analysis Batch: 200-42794
 Prep Batch: N/A
 Leach Batch: N/A
 Units: ug/L

Instrument ID: L.i
 Lab File ID: lhmj05.d
 Initial Weight/Volume: 5 mL
 Final Weight/Volume: 5 mL

Analyte	Result	Qual	MDL	RL
Methyl t-butyl ether	1.0	U	0.17	1.0
Benzene	1.0	U	0.17	1.0
Toluene	1.0	U	0.17	1.0
Ethylbenzene	1.0	U	0.18	1.0
m&p-Xylene	1.0	U	0.36	1.0
o-Xylene	1.0	U	0.17	1.0
Xylenes, Total	1.0	U	0.17	1.0
1,3,5-Trimethylbenzene	1.0	U	0.18	1.0
1,2,4-Trimethylbenzene	1.0	U	0.20	1.0
Naphthalene	1.0	U	0.12	1.0

Surrogate	% Rec	Acceptance Limits
1,2-Dichloroethane-d4	94	80 - 115
Toluene-d8	102	80 - 115
Bromofluorobenzene	106	85 - 120
1,2-Dichlorobenzene-d4	95	80 - 115

Quality Control Results

Client: Aquaterra

Job Number: 200-11906-1

Lab Control Sample - Batch: 200-42794

Method: 8260B

Preparation: 5030B

Lab Sample ID: LCS 200-42794/3
 Client Matrix: Water
 Dilution: 1.0
 Analysis Date: 08/01/2012 1107
 Prep Date: 08/01/2012 1107
 Leach Date: N/A

Analysis Batch: 200-42794
 Prep Batch: N/A
 Leach Batch: N/A
 Units: ug/L

Instrument ID: L.i
 Lab File ID: lhmj03.d
 Initial Weight/Volume: 5 mL
 Final Weight/Volume: 5 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Methyl t-butyl ether	25.0	24.8	99	85 - 120	
Benzene	25.0	26.3	105	85 - 120	
Toluene	25.0	26.3	105	85 - 120	
Ethylbenzene	25.0	25.8	103	85 - 120	
m&p-Xylene	50.0	52.2	104	85 - 120	
o-Xylene	25.0	25.7	103	85 - 120	
1,3,5-Trimethylbenzene	25.0	25.4	102	85 - 120	
1,2,4-Trimethylbenzene	25.0	25.1	100	85 - 120	
Naphthalene	25.0	25.0	100	85 - 125	
Surrogate	% Rec		Acceptance Limits		
1,2-Dichloroethane-d4	100		80 - 115		
Toluene-d8	103		80 - 115		
Bromofluorobenzene	103		85 - 120		
1,2-Dichlorobenzene-d4	95		80 - 115		

Quality Control Results

Client: Aquaterra

Job Number: 200-11906-1

Method Blank - Batch: 200-43108

Method: 8260B

Preparation: 5030B

Lab Sample ID: MB 200-43108/5
 Client Matrix: Water
 Dilution: 1.0
 Analysis Date: 08/06/2012 1256
 Prep Date: 08/06/2012 1256
 Leach Date: N/A

Analysis Batch: 200-43108
 Prep Batch: N/A
 Leach Batch: N/A
 Units: ug/L

Instrument ID: L.i
 Lab File ID: lhmk05.d
 Initial Weight/Volume: 5 mL
 Final Weight/Volume: 5 mL

Analyte	Result	Qual	MDL	RL
Methyl t-butyl ether	1.0	U	0.17	1.0
Benzene	1.0	U	0.17	1.0
Toluene	1.0	U	0.17	1.0
Ethylbenzene	1.0	U	0.18	1.0
m&p-Xylene	1.0	U	0.36	1.0
o-Xylene	1.0	U	0.17	1.0
Xylenes, Total	1.0	U	0.17	1.0
1,3,5-Trimethylbenzene	1.0	U	0.18	1.0
1,2,4-Trimethylbenzene	1.0	U	0.20	1.0
Naphthalene	1.0	U	0.12	1.0
Surrogate	% Rec	Acceptance Limits		
1,2-Dichloroethane-d4	93	80 - 115		
Toluene-d8	105	80 - 115		
Bromofluorobenzene	108	85 - 120		
1,2-Dichlorobenzene-d4	98	80 - 115		

Quality Control Results

Client: Aquaterra

Job Number: 200-11906-1

Lab Control Sample - Batch: 200-43108

Method: 8260B

Preparation: 5030B

Lab Sample ID: LCS 200-43108/3
 Client Matrix: Water
 Dilution: 1.0
 Analysis Date: 08/06/2012 1151
 Prep Date: 08/06/2012 1151
 Leach Date: N/A

Analysis Batch: 200-43108
 Prep Batch: N/A
 Leach Batch: N/A
 Units: ug/L

Instrument ID: L.i
 Lab File ID: lhmk03.d
 Initial Weight/Volume: 5 mL
 Final Weight/Volume: 5 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Methyl t-butyl ether	25.0	24.4	98	85 - 120	
Benzene	25.0	26.8	107	85 - 120	
Toluene	25.0	26.4	105	85 - 120	
Ethylbenzene	25.0	26.0	104	85 - 120	
m&p-Xylene	50.0	53.4	107	85 - 120	
o-Xylene	25.0	26.0	104	85 - 120	
1,3,5-Trimethylbenzene	25.0	25.7	103	85 - 120	
1,2,4-Trimethylbenzene	25.0	25.3	101	85 - 120	
Naphthalene	25.0	24.4	98	85 - 125	
Surrogate	% Rec		Acceptance Limits		
1,2-Dichloroethane-d4	90		80 - 115		
Toluene-d8	103		80 - 115		
Bromofluorobenzene	102		85 - 120		
1,2-Dichlorobenzene-d4	95		80 - 115		

[illegible]

Login Sample Receipt Checklist

Client: Aquaterra

Job Number: 200-11906-1

Login Number: 11906

List Source: TestAmerica Burlington

List Number: 1

Creator: Poucher, Stephanie A

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	NO SEALS
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	Received same day of collection; chilling process has begun.
Cooler Temperature is recorded.	True	10.8°C IR GUN ID 154
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	Check done at department level as required.